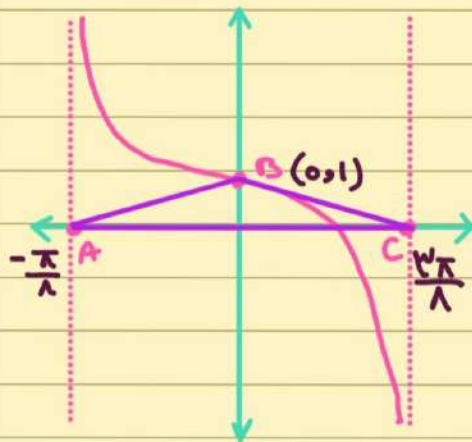


۱-



$$y = \tan\left(-2x + \frac{\pi}{\epsilon}\right)$$

$$\stackrel{x=0}{\implies} \tan\left(-2(0) + \frac{\pi}{\epsilon}\right) = 1$$

$$B = (0, 1)$$

$$\tan\left(-2x + \frac{\pi}{\epsilon}\right) = \text{تعريف للعدد}$$

$$-2x + \frac{\pi}{\epsilon} = \frac{\pi}{\gamma} \rightarrow x = -\frac{\pi}{\lambda} \rightarrow C$$

$$-2x + \frac{\pi}{\epsilon} = -\frac{\pi}{\gamma} \rightarrow x = \frac{2\pi}{\lambda} \rightarrow A$$

$$S_{\triangle ABC} = \frac{\left(\frac{2\pi}{\lambda} - \left(-\frac{\pi}{\lambda}\right)\right) \times 1}{2} = \frac{\pi}{\gamma}$$

۲-

$$x^2 - (\sin \alpha)x - \frac{1}{\varepsilon} \cos^2 \alpha = 0$$

$$\xrightarrow{x = \frac{r}{\varepsilon}} \left(\frac{r}{\varepsilon}\right)^2 - \frac{r}{\varepsilon}(\sin \alpha) - \frac{1}{\varepsilon} \cos^2 \alpha = 0$$

$$\times \varepsilon \Rightarrow 16 - 12 \sin \alpha - 9 \cos^2 \alpha = 0$$

(1 - \sin^2 \alpha)

$$9 \sin^2 \alpha - 12 \sin \alpha + 1 = 0 \xrightarrow{\Delta = b^2 - 4ac} (-12)^2 - 4(9)(1) = 144 = 12^2$$

$$\sin \alpha \rightarrow \frac{12 \pm 12}{18} \quad \begin{matrix} \text{قبول} \\ \text{رد} \end{matrix} \quad (\sin \alpha \leq 1)$$

$$\rightarrow \frac{12 - 12}{18} = \frac{1}{3} \quad \checkmark$$

$$\sin^2 \alpha + \cos^2 \alpha = 1 \rightarrow \frac{1}{9} + \cos^2 \alpha = 1 \rightarrow \cos^2 \alpha = \frac{8}{9}$$

$$\tan^2 \alpha + 1 = \frac{1}{\cos^2 \alpha} = \frac{9}{8}$$

۳-

$$\log(\sin \alpha) - \log(-\cos \alpha) = \log\left(\frac{-\sin \alpha}{\cos \alpha}\right) = \log(-\tan \alpha) = \log 3$$

$$\tan \alpha = -3 \quad 1 + \tan^2 \alpha = \frac{1}{\cos^2 \alpha} \quad 1 + 9 = \frac{1}{\cos^2 \alpha} \rightarrow \cos \alpha = \frac{-\sqrt{10}}{10}$$

(کمیته منهای است تا رادیکال مثبت نشود)

$$\sin^2 \alpha + \cos^2 \alpha = 1 \rightarrow \sin^2 \alpha = \frac{9}{10} \rightarrow \sin \alpha = \frac{3\sqrt{10}}{10}$$

$$\sin \alpha - \cos \alpha = \frac{3\sqrt{10}}{10} + \frac{\sqrt{10}}{10} = \frac{4\sqrt{10}}{10} = \frac{2\sqrt{10}}{5}$$

-۴

$$\sin^2 \theta + \cos^2 \theta = \frac{\epsilon}{\Delta} \rightarrow \sin^2 \theta - \sin^2 \theta + 1 = \frac{\epsilon}{\Delta} \quad *$$

$$\cos^2 \theta + \sin^2 \theta = \sin^2 \theta - 2\sin \theta + 1 + \sin^2 \theta$$

$$(1 - \sin^2 \theta)^2 \quad \sin^2 \theta - \sin \theta + 1 = \frac{\epsilon}{\Delta} \quad *$$

-۵

$$\frac{r \sin m + C_m \sin m}{\frac{r - r \cos^2 m}{r(1 - \cos^2 m)}} = \frac{\sin m (r + C_m)}{\sin m} \Rightarrow \frac{r + C_m}{\sin m} < 0$$

کواره مثبت

$$\sin m < 0$$

$$\sin m \tan m - \frac{1}{\cos m} > 0 \rightarrow \frac{\sin^2 m - 1}{\cos m} > 0 \rightarrow \frac{-\cos^2 m}{\cos m} > 0 \rightarrow C_m < 0$$

$$\sin m, C_m < 0 \rightarrow \text{المنحنى له ميل سالب}$$

-۶

$$\frac{r}{\sin m} + \frac{r}{C_m} = \frac{r C_m + r \sin m}{\sin m C_m} = 0$$

$$r C_m + r \sin m = 0 \Rightarrow \frac{\sin m}{C_m} = -\frac{r}{r}$$

$$\tan m + C_m = -\frac{r}{r} - \frac{r}{r} = -\frac{1r}{r}$$

لارينا عابدين

$$1 + \sin \theta = \left(\sin \frac{\theta}{2} + \cos \frac{\theta}{2} \right)^2 \rightarrow \sqrt{\sin^2 \frac{\theta}{2} + 1} = \sin 2\frac{\theta}{2} + \cos 2\frac{\theta}{2} \quad -v$$

$$\sin n + \cos n = \sqrt{2} \sin \left(n + \frac{\pi}{4} \right)$$

$$\sin 45^\circ + \cos 45^\circ = \sqrt{2} \sin 90^\circ = \sqrt{2} \cos 45^\circ \quad \star$$

$$\sin p + \sin q = 2 \sin \left(\frac{p+q}{2} \right) \cos \left(\frac{p-q}{2} \right)$$

$$\sin 45^\circ + \sin 15^\circ = 2 \sin 30^\circ \cos 15^\circ = \cos 15^\circ \quad \star$$

$$\Rightarrow \frac{\sqrt{1 + \sin 90^\circ}}{\sin 45^\circ + \sin 15^\circ} = \frac{\sqrt{2} \cos 15^\circ}{\cos 15^\circ} = \sqrt{2}$$

$$\frac{\cos 15^\circ}{(1 - \sin 45^\circ)} \frac{\cos 15^\circ}{(2 \cos 15^\circ - 1)} \frac{\cos 15^\circ}{\left(\frac{1 - \tan^2 15^\circ}{1 + \tan^2 15^\circ} \right)} = \cos 15^\circ \cos 15^\circ \cos 15^\circ \quad \wedge$$

$$\times \frac{\sin 15^\circ}{\sin 15^\circ} \rightarrow \frac{\sin 15^\circ \cos 15^\circ \cos 15^\circ \cos 15^\circ}{\sin 15^\circ} = \frac{\cos 15^\circ}{\sin 15^\circ} = \frac{1}{\wedge} \cot 15^\circ$$

-9

$$\sin x + 3 \cos x = 2 \rightarrow \sin x = 2 - 3 \cos x$$

$$\rightarrow (\sin x + 3 \cos x)^2 = \sin^2 x + 6 \sin x \cos x + 9 \cos^2 x = 4$$

$$(1 - \cos^2 x) + 6 \cos^2 x + 9(1 - \cos^2 x) \cos x = 4$$

$$-10 \cos^2 x + 12 \cos x = 3 \quad *$$

$$\Delta \cos^2 x - 12 \cos x = \Delta (\cos^2 x - 1) - 12 \cos x = 10 \cos^2 x - 12 \cos x - \Delta = -1 \quad \begin{matrix} -3 \\ * \end{matrix}$$

-10

$$\sin \hat{B} \sin \hat{C} = \cos \frac{A}{2} = \frac{1 + \cos \hat{A}}{2}$$

$$2 \sin \hat{B} \cdot \sin \hat{C} = 1 + \cos \hat{A}$$

$$2 \left(\frac{1}{2} (\cos(\hat{B} - \hat{C}) - \cos(\pi - \hat{A})) \right) = \cos \hat{A} + 1$$

$$\cos(\hat{B} - \hat{C}) + \cos \hat{A} = \cos \hat{A} + 1$$

$$\cos(\hat{B} - \hat{C}) = 1$$

$$\hat{B} = \hat{C} = 90^\circ \quad 180^\circ - 180^\circ = 0^\circ = \hat{A}$$

